

Claims

1. Method for adaptation of multi-user multimedia data in a communication system with a server providing the multi-user multimedia data to clients and with an intermediate network part,
5 characterised in that said intermediate network part provides information on communication between the server and the clients and said method comprises
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 - sending data stream from the server to the clients,
 - determining of distribution characteristics associated with the clients,
 - in said intermediate network part, generating aggregated
15 feedback report on the clients' reception conditions of the data stream considering the distribution characteristics, wherein said feedback report includes information about aggregation fashion,
 - sending the aggregated feedback report to the server,
 - 20 - adapting the transmission of the data stream from the server to the clients according to the aggregated feedback report.
2. Method according to claim 1 characterised in that the distribution characteristics are related to a geographical area
25 including a group of clients.
3. Method according to claim 2 characterised in that the geographical area is covered by one or more cells in a wireless communication network.
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4. Method according to claim 1 characterised in that the distribution characteristics are related to a determined multicast group structure.

5. Method according to one of the claims 1 to 4 characterised in that the distribution characteristics are related to information received from a radio resource management.
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6. Method according to claim 5 characterised in that the information received from the radio resource management are sent either frequently or event-based.
- 10 7. Method according to one of the claims 1 to 4 characterised in that the distribution characteristics are related to information received from the clients.
8. Method according to claim 7 characterised in that the
- 15 information received from the clients are sent either frequently or event-based.
9. Method according to one of the claims 1 to 4 characterised in that feedback reports from the clients are suppressed in the
- 20 network terminals.
10. Method according to one of the claims 1 to 9 characterised in that information received from the clients impacts information from the radio resource management.
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11. Method according to claim 1 characterised in that the information about aggregation fashion includes a number of clients to which the aggregated feedback report applies.
- 30 12. Method according to claim 1 characterised in that the additional information about aggregation fashion comprises radio characteristics of an access network in which the clients are.

13. Method according to one of the claims 1 to 12 characterised in that the additional information about aggregation fashion comprises information about the adaptation manner
- 5 14. Method according to claim 6 or 8 characterised in that a negotiation on the frequency of feedback reports from the clients and/or from the radio resource management to the intermediate node is performed.
- 10 15. Method according to one of the claims 1 to 14 characterised in that the terminals refrain from sending feedback reports to other terminals receiving the data stream.
- 15 16. Method according to one of the claims 1 to 15 characterised in that the generated aggregated feedback report includes a fraction of lost packets provided by the intermediate node depending on the current conditions of delivery, a highest sequence number the intermediate node has received, an interarrival jitter provided by the intermediate node.
- 20 17. Method according to one of the claims 1 to 16 characterised in that by receiving the aggregated feedback report the source utilizes the information included in the report considering the percentage of the clients for which said feedback applies. (The reaction can be to announce a new channel to the clients or to adapt the stream, for example to reduce bit-rate or to switch to more reliable codec.)
- 25 18. Method according to one of the claims 1 to 14 characterised in that the generation of the aggregated feedback report and the determining of distribution characteristics associated with the clients are either performed in a same node being intermediate
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network part or are split between different nodes forming the intermediate network part.

19. Method according to one of the claims 1 to 18 characterised
5 in that the transmission of data stream is performed by means of RTP having a control protocol RTCP for reporting feedback.
20. Intermediate network part adapted to perform an adaptation of multi-user data stream in a communication system with a server
10 providing the multi-user data stream to clients, wherein said intermediate network part is arranged to provide information on communication between the server and the clients and wherein said intermediate network part comprises
- means for forwarding data stream from the server to the
15 clients,
 - means for determining of distribution characteristics associated with the clients
 - means for generating an aggregated feedback report on the clients' reception conditions of the data stream considering
20 distribution characteristics, wherein said feedback reports include additional information about aggregation fashion,
 - means for sending the aggregated feedback report to the server.
21. Intermediate network part according to claim 20 having all
25 means implemented in a same network node.
22. Intermediate network part according to claim 20 having the means for determining of distribution characteristics associated
30 with the clients and the means for generating an aggregated feedback report being split between different nodes.

23. Intermediate network part according to claim 22 having means for receiving the external determined distribution characteristics associated with the clients.